

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
REGION I

IE Inspection Report No: 50-219/75-11 Docket No: 50-219  
Licensee: Jersey Central Power and Light Company License No: DPR-16  
Attn: Mr. Ivan R. Finfrock, Jr., Vice President Priority: \_\_\_\_\_  
Madison Avenue at Punch Bowl Road Category: C  
Morristown, New Jersey 07960 Safeguards Group: \_\_\_\_\_  
Location: Forked River, New Jersey  
Type of Licensee: BWR, 1930 Mwt. (GE)  
Type of Inspection: Routine, Announced  
Dates of Inspection: April 14-18, 1975  
Dates of Previous Inspection: March 25-28, 1975  
Reporting Inspector: *T. Martin* 5/19/75  
T. Martin, Reactor Inspector DATE  
Accompanying Inspectors: \_\_\_\_\_ DATE  
\_\_\_\_\_ DATE  
\_\_\_\_\_ DATE  
Other Accompanying Personnel: \_\_\_\_\_ DATE  
Reviewed By: *E. C. McCabe* 5/22/75  
*for* E. C. McCabe, Senior Reactor Inspector DATE  
Nuclear Support Section, Reactor Operations Branch

B/826

## SUMMARY OF FINDINGS

### Enforcement Action

#### A. Items of Noncompliance

##### 1. Infraction

Contrary to 10 CFR 50, Appendix B, Criterion V; FSAR Amendment 71, the Oyster Creek Operational Quality Assurance Plan, Section V; and Technical Specifications 6.2.A.5 and 6.2.C; the requirements of Procedure 212, Refueling, were not met: in that portions of the Refueling Work List involving fuel motion were not signed by the Technical Supervisor and the Supervisor of Operations, but were prepared and approved by one Assistant Staff Engineer. (Details 6.e.)

### Licensee Action on Previously Identified Enforcement Items

Not Inspected

#### Design Changes

Not Inspected

#### Unusual Occurrences

None Identified

### Other Significant Findings

#### A. Current Findings

##### 1. Unresolved Items

(These are items for which more information is required in order to determine whether items are acceptable or Items of Noncompliance).

- a. Refueling Bridge Radiation Monitors surveillance testing. (Detail 4.f.)
- b. Reactor Building Roof Leak. (Detail 6.g.)
- c. Fuel Grapple movement coordination. (Detail 6.i.3.)

- d. Testing of New Control Rod Drives. (Detail 7.c.)
- e. Completed Log and Procedure Review. (Detail 8.)
- f. Potential Common Mode Failure. (Detail 9.)

B. Status of Previously Unresolved Items

Not Inspected

Management Interview

A management interview was held at the site on April 18, 1975

Personnel Attending

Mr. J. Carroll, Station Superintendent  
Mr. K. Fickeissen, Technical Supervisor  
Mr. E. Gowney, Technical Engineer  
Mr. J. Menning, Staff Engineer  
Mr. D. Reeves, Chief Engineer  
\* Mr. D. Ross, Manager, Nuclear Generating Stations  
Mr. J. Sullivan, Operations Engineer

The following summarizes the items discussed:

- A. Purpose of the Inspection (Detail 2.)
- B. Fuel Storage Area Ventilation requirements. (Detail 4.d.)
- C. Refueling Bridge Radiation Monitor testing. (Detail 4.f.)
- D. Stored Fuel Cooling capacity verification. (Detail 4.i.)
- E. Refueling Work List distribution and approval. (Detail 6.e.)
- F. Reactor Building Roof Leak. (Detail 6.g.)
- G. Refueling Bridge operations. (Detail 6.i.)
- H. Post-Refueling Outage Maintenance checks. (Detail 7.a.)

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\* Attended meeting via telephone link.

- I. Pre-Startup Checks. (Detail 7.b.)
- J. Completed Log and Procedure Review. (Detail 8.)
- K. Potential Common Mode Failure. (Detail 9.)

## DETAILS

### 1. Persons Contacted

Mr. R. Blair, Exxon Nuclear Engineer  
Mr. J. Carroll, Station Superintendent  
Mr. N. Cole, Shift Foreman  
Mr. K. Fickeissen, Technical Supervisor  
Mr. E. Growney, Technical Engineer  
Mr. G. Hicks, Shift Foreman  
Mr. N. Howey, Control Room Operator  
Mr. J. Maloney, Operations Supervisor  
Mr. J. Menning, Staff Engineer  
Mr. C. Orogvany, Associate Engineer  
Mr. R. Parshall, Engineering Assistant  
Mr. D. Reeves, Chief Engineer  
Mr. E. Riggle, Maintenance Supervisor  
Mr. E. Rosenfeld, Assistant Staff Engineer  
Mr. D. Ross, Manager, Nuclear Generating Stations  
Mr. J. Sullivan, Operations Engineer  
Mr. R. Swift, Maintenance Engineer

### 2. Inspection Purpose

The inspector stated the purpose of the inspection was to:

- a. verify that the licensee had prepared for the refueling;
- b. verify that planned major maintenance was covered by approved procedures;
- c. verify refueling activities satisfied licensee and regulatory requirements; and
- d. verify systems disturbed during the refueling outage would be thoroughly checked prior to their return to service.

### 3. Maintenance Procedures

The inspector examined the Master Outage Schedule Flow Chart to determine the major maintenance activities planned for the refueling outage. Based on this review, the inspector selected six (6) activities for review. Utilizing the guidance provided in "American National Standard for Administrative Controls for

Nuclear Power Plants," ANSI N18.7, the inspector examined the content and verified approved procedures existed for the following maintenance activities:

- a. Main Steam Isolation Valve Inspection and Repair, Procedure V-MSIV-1, Rev. 1;
- b. Removal of Reactor Safety Valves, Procedure V-RSFTV-1, Rev. 1;
- c. Reactor Safety Valve Installation, Procedure V-RSFTV-2, Rev. 1;
- d. Replacement of the Stem on "C" Outlet Recirculation Bypass Valve N608C, Procedure V-N608C-1, Rev. 1;
- e. Feedwater Flow Element Modification and Calibration, Installation Control Plan #10-74-ICP-1;
- f. Reactor Vessel Drain Line Repair, Master Control Plan #4-74-MCP-1.

The inspector had no further questions on these items.

#### 4. Pre-Refueling Activities

The inspector reviewed the Technical Specifications (T.S.), Refueling Surveillance Requirements, and the Refueling Procedure to determine what testing was required prior to refueling.

##### a. Refueling Interlocks (T.S. 4.9.A)

The inspector verified that refueling interlocks were tested prior to refueling and at least weekly thereafter utilizing the "Refueling Circuit and Rod Withdrawl Interlocks Test" procedure. The inspector had no further questions on this item.

##### b. Source Range Monitors (T.S. 4.9.B)

The inspector verified that Source Range Neutron Monitors (SRM's) were calibrated prior to refueling utilizing the "SRM Semi-Annual Bench Calibration" procedure. The SRM's were compared at least daily thereafter on the Control Room "Shutdown Log." The inspector had no further questions on this item.

c. Refueling Machine (RP Section 212.4)

The inspector verified that the operability of refueling equipment was proven prior to the refueling utilizing the "Pre-Outage Inspection of Refueling Tools and Equipment" procedure. Machine indexing did not require testing, since it is performed visually using position marks on the refueling bridge and the stationary hand rail perpendicular to the bridge. The inspector has no further questions on this item.

d. Fuel Storage Area Ventilation

The inspector noted that neither the Refueling Procedure or the Technical Specifications established minimum ventilation requirements in the fuel storage area. This item was discussed with the licensee. No licensee or regulatory requirement exists for this item, and the inspector had no further questions on fuel storage ventilation.

e. Crane Testing

The inspector verified that the Reactor Building Crane had been load tested prior to the refueling outage and documented on the "Crane Load Test Record," dated 1/3/75. The inspector had no further questions on this item.

f. Refueling Bridge Radiation Monitors

The refueling procedure indicated there were two radiation monitors on the refueling bridge. The inspector verified their existence and noted both instruments were operating with similar readings. Area Radiation Monitoring System procedure, section 904.7.6 Calibration, states in part: "All area radiation monitors shall be calibrated every six (6) months... ." The licensee produced records to show that the "Area Monitoring System - 6 Month Surveillance Test" had been run on these monitors on 4/9/74. Although the licensee believed the test had been conducted within the last 6 months, the records could not be produced for the inspector's review. This item is unresolved awaiting the licensee's attempt to locate the test record.

g. Refueling Deck Radiation Monitors

The inspector verified that the Reactor Building Operating Floor, Fuel Pool Area (low range), and Reactor Building Ventilation Exhaust Radiation Monitors were tested prior to and weekly during refueling to verify high radiation alarms (local and remote), Standby Gas Treatment System startup and proper sequencing, and Reactor Building Ventilation System isolation. The inspector had no further questions on this item.

h. Refueling Communications

The inspector verified that Refueling Bridge to Control Room communications were checked prior to refueling and at least once a shift thereafter when core alterations were being performed. These checks were recorded on the "Daily Refueling Bridge Check-Off" and the inspector had no further questions on this item.

i. Stored Fuel Cooling

The inspector noted that neither the Technical Specifications nor the Refueling Procedure require a determination of the cooling capacity for stored fuel prior to refueling. The licensee indicated that this determination would be impossible with the presently installed instrumentation; and that the licensee did not feel it necessary to establish this capacity, due to the ability of installed instrumentation to provide early warning of a problem. The inspector determined that the "Radioactive Waste System Operating Log" records Fuel Pool Cooling System flow and filter differential pressure hourly, and the "Control Room Shutdown Log" records Spent Fuel Pool and Shutdown Cooling Loop "B" temperatures. The inspector concurred that trends in these readings would provide adequate early warning of a problem and had no further questions on this item.

j. Core Spray (RP 212.6.7)

The inspector verified that the Core Spray "Pump Operability Test" and "Motor-Operated Valve Operability" tests had been executed prior to the refueling. The inspector had no further questions on this item.

k. Containment Spray and Emergency Service Water (RP 212.6.8)

The inspector verified that the "Containment Spray Operability" test, which includes the operability test of the Emergency Service Water System, had been executed prior to refueling. The inspector had no further questions on this item.

l. Fire Protection (RP 212.6.9)

The inspector reviewed completed "Fire Pump Operability Check-Off Sheets" and "Weekly Battery Inspection Sheets" to verify Fire Protection System operability. No inadequacies were identified and the inspector had no further questions on this item.

m. Standby Liquid Control System (RP 212.2.4)

The inspector reviewed the completed "Standby Liquid Control Pump Operability Check-Off" procedure and "Sodium Pentaborate Concentration" determination records to verify the operability of the Standby Liquid Control System. No inadequacies were identified. The inspector had no further questions on this item.

5. Refueling Procedure

In examining the Master Outage Schedule Flow Chart, the inspector identified those activities involving the fuel. The procedures associated with these activities were then reviewed to determine their status and quality of content. The procedure content was compared to the guidance provided in ANSI 18.7.

a. Fuel Transfer

Revision 9 of the Refueling Procedure, section 212 of the plant procedures, was available for use and approved prior to the start of refueling.

b. Core Verification

The Core Verification Procedure, section 1001.24 of the plant procedures, was approved and available for use prior to the start of refueling.

c. Fuel Inspection

The Fuel Examination Procedure, section 215 of the plant procedures, was available for review, but had not yet been approved for use. The procedure covered visual inspection, length measurements, eddy current testing, and gamma scanning. The licensee stated the procedure had not yet been used.

d. Fuel Sipping Operations

The Incore Sipping Procedure, section 213 of the plant procedures, was approved and available for use prior to the start of refueling.

e. Fuel Bundle Reconstitution

A procedure for fuel bundle reconstitution was not available or required. All seventeen fuel bundles containing leaking fuel pins were scheduled for unloading during this refueling.

The inspector found no inadequacies with the procedures, reviewed to the provisions of ANSI 18.7, and had no further questions on these items.

6. Refueling Activities

The inspector examined logs and records, and performed direct observations of the refueling operations during day and evening shifts, to verify the status of licensee compliance with his Technical Specifications (T.S.) and Refueling Procedures (R.P.).

a. Core Monitoring

The inspector verified, by observation in the Control Room, that during core alterations the Source Range Monitor (SRM) nearest the alteration was operable. Review of the Control Room Shutdown Log demonstrated that the SRM's were read and recorded hourly. The Control Room operator positioned himself in a position to easily observe the SRM's during core alteration. The inspector identified no discrepancies from the requirements of T.S. 3.9.D and R.P 212.8.2 and had no further questions on this item.

b. Failed Source Range Monitor

The licensee informed the inspector that SRM channel 24 had failed on 4/15/75. From a review of the Control Room Log and discussion with licensee representatives the following information was obtained.

- (1) During the morning of 4/15/75, with refueling in progress, SRM channel 24 spiked to 100,000 counts/second.
- (2) The Control Room immediately notified the Refueling Bridge, and core refueling operations were suspended.
- (3) SRM channels 21,22, and 23 showed normal activity indicating the core had not gone critical.
- (4) Approximately one minute later, SRM channel 24 dropped to its previous reading of 40 counts/second.
- (5) With core refueling suspended, a detailed core verification was performed on the core quadrant associated with that instrument. No discrepancies were noted.
- (6) Hours later, SRM channel 24 was declared faulty, based on extremely low detector output impedance measurements and inspection of the detector connector.
- (7) Core refueling was resumed in those quadrants having operable SRM's.
- (8) During the evening of 4/15/75, a Plant Operations Review Committee meeting was held.
  - (a) SRM/IRM Detector Removal and Replacement procedure, revision 0 of plant procedure 719.1, dated 4/15/75 was reviewed and approved for use.
  - (b) SRM/IRM Drive Tube Removal and Replacement procedure, a special procedure dated 4/15/75, was reviewed and approved for use.
  - (c) A temporary change to the Refueling procedure, revision 9 of plant procedure 212, was recommended that would remove the requirement to conduct a Shutdown Margin Measurement if a SRM has a sustained reading of 1000 counts/second or higher. The committee concluded that the sustained reading was caused by a faulty instrument and not by criticality.
- (9) By the afternoon of 4/16/75, SRM channel 24 was repaired. SRM front panel check were conducted and found satisfactory.
- (10) Core refueling restrictions in SRM channel 24 core quadrant were removed. The inspector had no further questions on this item.

c. Containment Integrity

Accompanied by a licensee representative, the inspector verified that the Reactor Building was closed and that at least one door in each access opening was closed. The "Reactor Building Operating Floor, Fuel Pool Area (low range), and Reactor Building Ventilation Exhaust Radiation Monitors" surveillance test records from 4/8/75 and 4/15/75 documented the proof of the Standby Gas Treatment System and Reactor Building Ventilation System Automatic Isolation Valve operability. No discrepancies were identified from the definition of Secondary Containment Integrity of T.S. 1.14 or the requirements of R.P. 212.6. The inspector had no further questions on this item.

d. Fuel Handling

The inspector observed the following fuel handling and core alteration operations.

- (1) Fuel Unloading.
- (2) Fuel Channeling.
- (3) Fuel Loading.
- (4) Core Instrumentation Hole Plugging.

The inspector verified the Refueling Floor Supervisor was a qualified Senior Reactor Operator. The inspector observed the Supervisor performing the checks required by the "Daily Refueling Bridge Check-Off" sheet. Under the direction of the Supervisor, one man operated the fuel grapple to manipulate fuel bundles, while a second man communicated movements to the Control Room. The inspector was satisfied that refueling operations were conducted by the Refueling Floor personnel in accordance with procedures available to them. The inspector had no further questions on this item.

e. Refueling Work List

(1) Implementation

The master copy of the Refueling Work List was maintained in the Control Room, while a copy was available on the Refueling Floor. During the inspector's observation, as many as three separate teams were working on the Refueling Floor. The Refueling Bridge

crew had ready phone access to the Control Room and the Master copy of the Refueling Work List was maintained up to date as it concerned core alterations. The Fuel Channeling crew periodically updated the Control Room Refueling Work List, but this portion of the master list was not always current. The third crew was making channel measurements.

On two separate occasions during the inspector's observation, refueling operations were halted when the Fuel Channeling crew could not perform a required operation. In the first case, the Refueling Bridge crew had been unable to keep pace with the Fuel Channeling crew. In the second case, a revision to the Refueling Work List had not been provided to the Refueling Floor personnel. The inspector noted that the Refueling Floor personnel correctly halted refueling operations until the confusion was cleared.

The inspector reviewed the completed "Refueling Work List" sheets and did not detect any fuel movement to, from, or within the reactor vessel that was not in the required sequence.

(2) Preparation and Approval

Technical Specifications 6.2.A states:

"Detailed written procedures with appropriate check-off lists and instructions shall be provided for the following conditions: ....5. Refueling operations."

Technical Specification 6.2.C states:

"Standing instructions to the operating staff shall require that the procedures identified in A and B above are to be followed in conducting activities identified therein."

Jersey Central Power and Light Company, Generation Department Operational Quality Assurance Plan (FSAR Amendment 71), section V (Instructions, Procedures, and Drawings) states:

".... The Oyster Creek Superintendent is responsible for ensuring that instructions and procedures associated with ...., fuel handling, .... are prepared, reviewed, approved, and implemented in accordance with this Quality Assurance Plan. ...."

10 CFR 50, Appendix B, Criterion V states:

"Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, (of) a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. ..."

Refueling Procedure 212, section 212.3 (Authorization) states:

"..... All movement of fuel, control rods, or other core components to, from, or within the reactor vessel must be done in accordance with the Refueling Work List signed by the Technical Supervisor and the Supervisor of Operations. ...."

Contrary to the above, several revision pages to the Refueling Work List involving movement of fuel were signed as prepared and approved by one Assistant Staff Engineer. This failure to follow the Refueling Procedure is an Infraction level Item of Noncompliance.

f. Fuel Accountability

Fuel movements were documented on the Refueling Work List, and the Refueling Floor and Control Room Status Boards reflected the movements so documented. The inspector discussed fuel cycle accountability practices with the licensee and had no further questions on this item.

g. Roof Leak

While observing refueling operations during the period of a rain storm, the inspector noted a sizeable leak in the Reactor Building roof. The inspector informed the licensee that water was spilling on stored sources and bagged material, and was flooding potentially contaminated floors.

The licensee rigged plastic sheets to catch and redirect the leak to permanent drains, covered the sources with plastic sheets, and constructed temporary rag dams to limit the extent of flooding. The licensee informed the inspector that roof repairs are planned.

The leak into the Reactor Building is a licensee house-keeping problem and the inspector had no further questions on that aspect of this item. This item is unresolved pending review of the licensee's summary technical report of the secondary containment capability tests required by T.S. 4.5.J.4.

h. Reactor Vessel Component Storage

The inspector examined shield blocks, drywell head, reactor vessel head nuts, reactor vessel head, dryer assembly, and steam separator assembly storage. No inadequacies were found with the licensee's storage practices to protect these components from damage and the inspector had no further questions on this item.

i. Refueling Bridge Practices

The inspector observed refueling operations from the Refueling Bridge.

- (1) All tools used over the refueling cavity had safety lanyards attached. Film badges and dosimeters were mechanically attached to clothing and taped in place. The inspector had no further questions on this item.
- (2) The fuel grapple was disengaged from newly inserted fuel before the Refueling Bridge received confirmation from the Control Room of no abnormal SRM activity. The inspector expressed concern that fuel insertions were not sufficiently coordinated with the Control Room operator to assure that the SRM's are watched during fuel insertion, and that the grapple is not disengaged until normal SRM activity is verified. Once the fuel grapple is disengaged, reactivity control is lost.

Later observations of refueling activities demonstrated the close coordination between the Refueling Bridge and Control Room that had previously been lacking. The licensee did not commit to this practice and this item is unresolved awaiting his position.

j. Refueling Crew Qualifications

The inspector examined training records for the operating staff, noting several employees had not completed the "Training System Check-Out", #19 Fuel Handling. The licensee stated that any man

handling fuel has either completed the Fuel Handling System Checkout satisfactorily or is under direct supervision.

All licensed operators had completed the system check-out. A Senior Reactor Operator licensed supervisor did directly supervise Refueling Bridge operations, and a licensed Reactor Operator was stationed in the Control Room. This item conforms to the licensee's commitments concerning "Staffing Requirements for Refueling" (reference: IE:I Inspection Report 50-219/75-10, detail 3, dated 4/15/75) and the inspector had no further questions on this item.

k. Reactor Controls (T.S. 3.9.A and B)

The inspector verified by observation that the Reactor Mode Switch was locked in the "Refuel" position with the key removed, and that fuel was not loaded into the core unless all Control Rods were fully inserted. The inspector had no further questions on this item.

7. Post-Refueling Checks

The inspector reviewed various procedures and checklists to verify systems disturbed during the refueling would be prepared for startup and proved operable.

a. Post Maintenance

The Work Request Sheet identified the work to be done and the tests to be performed. Completion of the work is required prior to clearing the tags. The tagging procedures, plant procedure section 108, requires an operability check of the system on clearing the tags. The inspector had no further questions on this item.

b. Pre-Startup Checks

The inspector reviewed the Cold Startup (Extended Outage) procedure, plant procedure section 202, revision 4, dated 4/11/74. The inspector determined that this procedure does require system lineup and startup checks for the Primary Coolant, Nuclear instrumentations, Feedwater, Control Rod Drive, and Emergency Core Cooling Systems. The inspector had no further questions on this item.

c. New Control Rod Drives

The inspector could find no requirement in the Master Startup Checkoff for the execution of plant procedure section 302.3.4.1, "Venting, Timing, and Notching of Newly Installed Control Rod Drives," when required. The licensee stated that a requirement to execute this procedure on new Control Rod Drives would be inserted in a revision to the Master Startup Checkoff. This item remains unresolved.

8. Completed Log and Procedure Review

In reviewing the various logs and completed procedures associated with this inspection, the inspector noted some omitted entries, illegible entries, and missing initials. The inspector questioned how these items passed Station Management review, since the inspector could find no indication on the records of corrective action. The licensee stated he would look into this item.

The inspector questioned why some completed procedure checkoff sheets did not show evidence of management review. The licensee stated that a separate management review signature sheet attachment would be required on all completed surveillance checkoff sheets.

These items are unresolved.

9. Potential Common Mode Failure

In reviewing the SRM Semi-Annual Bench Calibration Checklists," executed 3/25/75 and 3/26/75, the inspector noted that one man had performed and signed for all four channels of instrumentation. The inspector expressed his concern to the licensee that this practice could lead to a common mode failure of all channels, if the technician performing the calibration made the same error on each instrument. The inspector acknowledged that the SRM channels are not considered safety systems.

The licensee responded that the technician was using approved procedures and that the licensed Reactor operator on the front panel was aware of the procedure being performed.

This item is unresolved.